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BD Ford Turbo Retrofit

Fit a factory-based 2017+ turbo into 2011-2014 models

Part #	Turbo	Compressor Size	Max Airflow
1045824	Ford OEM 17+	61 mm	66 lb/min
1045825	BD Screamer	64 mm	81 lb/min

An emissions compliant engine calibration must be used.

Edge CTS Evolution is recommended for 1045824
PPEI tuning for a 15+ turbo is recommended for 1045825

Incorrect engine calibration will cause the truck to enter a de-rated fuel mode

Introduction

The BD Ford Turbo Retrofit allows you to install a larger GT37 based turbocharger from the 2017+ 6.7L trucks onto a vehicle that originally came equipped with the smaller GT32 SST “DualBoost” or standard GT32 without the need for additional parts.

This will fit 2011-2014 pickups and 2011-2016 Cab & Chassis trucks. 2015 and 2016 models may have some engine overlap, check your specific vehicle prior to ordering.

This pre-assembled turbo utilizes BD exclusive compressor housing, turbine housing, and pedestal specifically designed to fit the OEM based GT37 in the factory location. The original factory intake, hot-pipes, downpipe, exhaust manifold, heat shield, and turbo outlet pipe are re-used and do not need to be replaced.

Pre-Installation Inspection

When replacing a turbocharger BD recommends the following precautions are taken:




- Replace or clean the air filter.
- Change the engine oil and filter.
- Inspect Intake and CAC passages for debris, and clean if necessary.



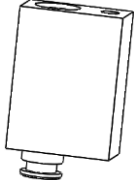


In the case of a previous failure also include the following steps:






- Inspect CAC for debris and cleanout if necessary.
- Inspect engine oil for debris. Flush system if debris was present.

Ensuring that these steps are followed will prolong the life of your new turbocharger.

Kit Contents

1045824	1045825	FC3Z-9U469-B
		
Turbo; BD Retro Qty: 1	Turbo; BD Retro Screamer Qty: 1	Tube; Water outlet Qty: 1

1515950	BC3Z-6587-A	1405827	1407079	FT-0135928
				
Harness; Wastegate Solenoid Qty: 1	Gasket; Pedestal Qty: 1	Spacer; Coolant Qty: 1	O-ring; #110 Qty: 1	Bolt; M6-1 x 65mm Qty: 1

1405858	1405829	1900068	FT-0427640	FT-0427642
				
Boot; 3.35"x4" Qty: 1	Boot; Intake Pickup Cap Qty: 1	Cap; 3/16" Qty: 1	Clamp; 2.75"-3.75" Qty: 2	Clamp; 3.5"-4.5" Qty: 1

Turbo Options

The OEM Problem:

The 2011-2014 Powerstroke 6.7L offered two different turbo's; one for the pickup truck and one for the cab & chassis. The cab & chassis offered a traditional-style 53mm compressor wheel with a 59mm turbine wheel. A Single Sequential Turbocharger (SST) allowed a single turbine wheel to be paired with two 44mm compressor wheels manufactured together as one. Both of these turbos offer unrivaled turbo response due to their petite GT32 turbo size, however the moment you increase the engine output, restrict the turbo intake, or tow heavy loads, the factory GT32 turbocharger becomes consumable.

The Solution:

For the majority of owners, Ford included the solution on the 2015+ Powerstroke, a larger traditional-style GT37 VGT. To retrofit this Ford solution onto the 2011-2014 trucks, it requires both the turbo and a list of mating parts to be replaced. BD now offers a solution that lets you fit a large GT37 turbo on your 2011-2014 truck without the need to replace excess components. BD also offers a Ford 6.7L Screamer Turbo Retrofit for those wanting to further increase their trucks airflow potential.

Ford 6.7L Turbo Selection								
Model Year	Pickup (Wide Frame)				Cab & Chassis (Narrow Frame)			
	Stock Replacement	Performance Upgrade			Stock Replacement	Performance Upgrade		
		Retro GT37	Retro GT37 Screamer	GT37 Screamer		Retro GT37	Retro GT37 Screamer	GT37 Screamer
2011	851824-5001	1045824	1045825		854572-5001s	1045824	1045825	
2012	851824-5001	1045824	1045825		854572-5001s	1045824	1045825	
2013	851824-5001	1045824	1045825		854572-5001s	1045824	1045825	
2014	851824-5001	1045824	1045825		854572-5001s	1045824	1045825	
2015				1045828	854572-5001s	1045824	1045825	
2016				1045828	854572-5001s	1045824	1045825	
2017	888143-5001s			1045827	888142-5001s			1045827
2018	888143-5001s			1045827	888142-5001s			1045827
2019	888143-5001s			1045827	888142-5001s			1045827

PRE-INSTALLATION

A new turbocharger will not solve the following failures:

- Oil contamination
- Restrictive oil drain
- Over speed due to a boost leak
- Exhaust leaks due to faulty bellows, clamps, or seals

Turbo over speed will lead to premature turbo failure. Boost pressure can be used to estimate turbo speed. The table below shows maximum allowable turbo speed for a stock motor at 3500rpm. A turbo intake restriction, clogged filter, high altitude or boost leak will cause increased wheel speed.

Turbo	Estimated Airflow (lb/min)	Max Wheel speed (rpm)	Max boost (psi)	Max Boost with clogged filter (psi)
OE GT37	66	121,000	33	30
BD Screamer	81	121,000	39	36

PRE-INSTALLATION NOTES:

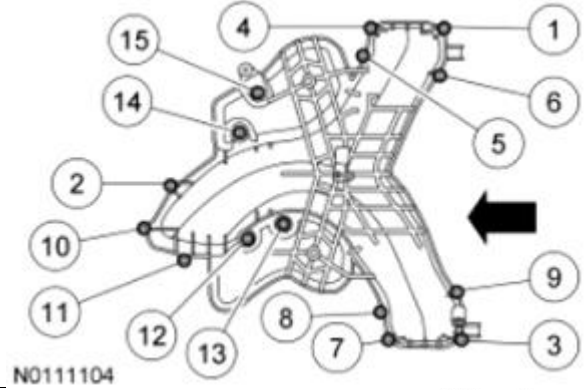
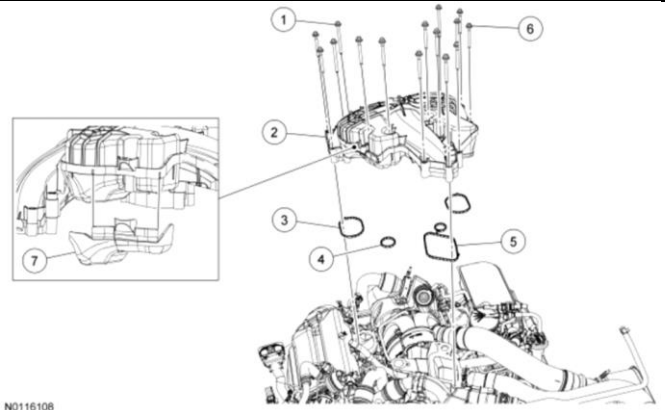
- 1) During the repair or install of components, cap, tape or otherwise appropriately protect all openings and tubes / fittings to prevent ingress of dirt or other contamination. Remove caps, tape and other protective materials prior to installation.
- 2) Special attention needs to be given to the sealing ports for the oil feed, the oil drain, and coolant lines on turbocharged engines. The sealing ports must be totally clean and free from O-ring residue, have no damage to the sealing surface and the lines to ensure that there are no leaks or repeat repairs.
- 3) Upon completing a turbocharger replacement, turn the motor over without starting engine to ensure oil pressure is present. Turbocharger journal bearings are highly susceptible to failure if run without a sufficient, steady, and clean oil supply for any amount of time.

Removal

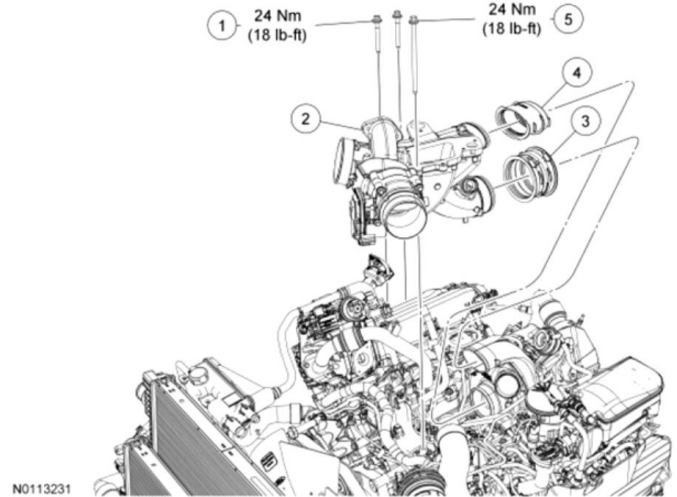
1. Safely secure the vehicle, remove the front right wheel, and disconnect the battery ground cable.

Drain the coolant system.

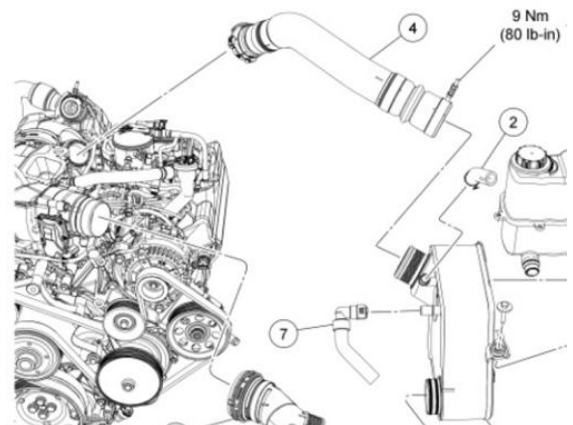
2. Remove the upper intake manifold.



3. Remove the lower intake manifold.



4. Remove the Charge Air Cooler tube.



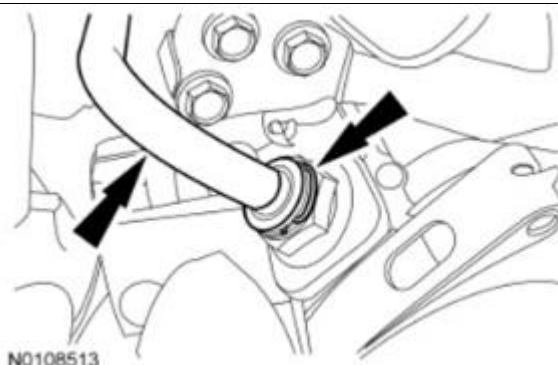
5. Disconnect the turbocharger actuator electrical connector and disconnect the wastegate actuator vacuum hose on pickup models.

Cap the shown location where the wastegate actuator solenoid was fed using the supplied Rubber bullet cap (1900068).

Note: Cab and Chassis models will not need to disconnect the wastegate actuator hose.

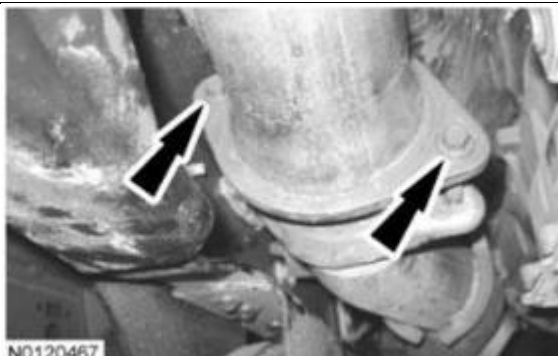


6. Remove the turbocharger coolant outlet tube.



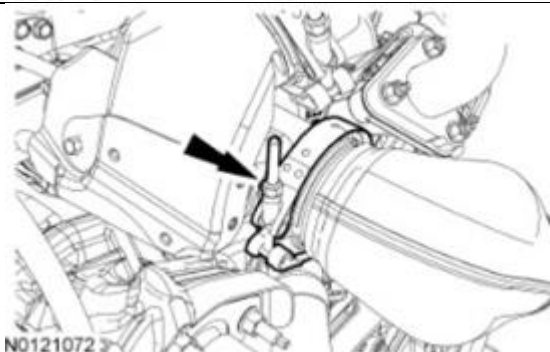
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7. Loosen the exhaust lower downpipe bolts.



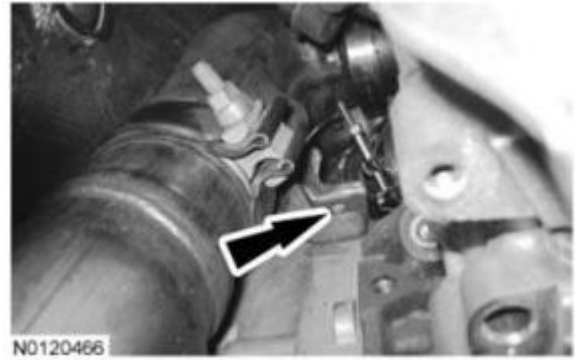
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8. Loosen the exhaust upper downpipe v-band clamp.

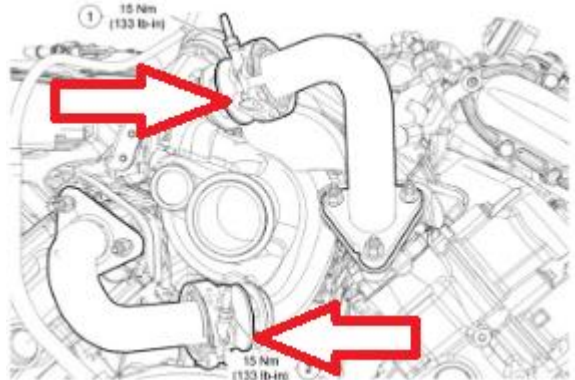


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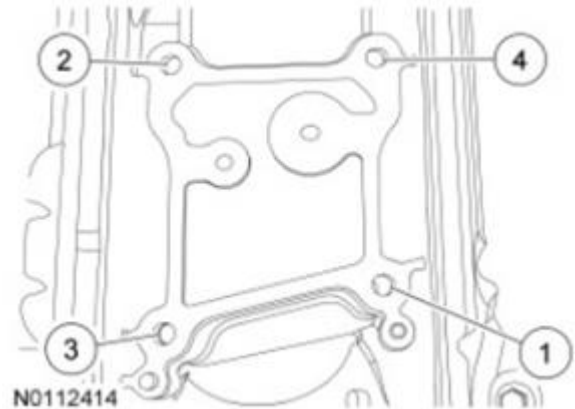
9. Loosen the exhaust upper downpipe bracket bolt.



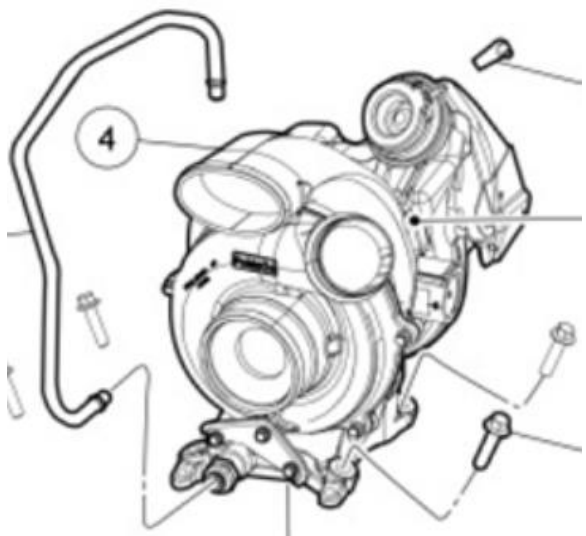
10. Unbolt both turbocharger exhaust hot-pipe v-band clamps.



11. Unbolt and remove the four turbocharger mounting bolts.



12. Remove turbocharger.
Keep OEM heat shield.



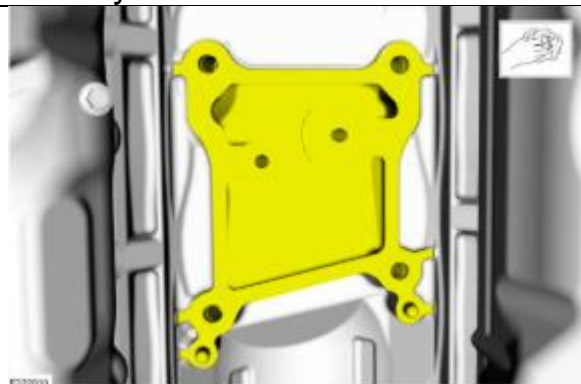
Installation

When an engine or turbocharger is replaced due to a failure, inspect components for debris.

CAC and CAC tubes
Exhaust manifolds
EGR cooler and pipes
Diesel Oxidation Catalyst

1. Clean all surfaces before proceeding.

Install the supplied new turbocharger mounting gasket. BC3Z-6587-A



2. Install OEM 2011-2014 heat shield on BD supplied turbocharger. Use supplied M6 bolts FT-11115714.



3. Ensure turbocharger pedestal bolts are tight and torqued to 26ftlbs (35 Nm)

Note: The updated turbocharger uses an internally fed oil feed and does not require the external oil line.



4. Use gasket BC3Z-6587-A and insert turbocharger.

Ensure no debris is knocked into the engine through the pedestal mount.

Loosely install the mounting bolts.



BD Engine Brake Inc.

Plant Address: 33541 MacLure Rd. Abbotsford, BC, Canada V2S 7W2

U.S. Shipping Address: 1124 Fir Avenue, Blaine, WA 98230

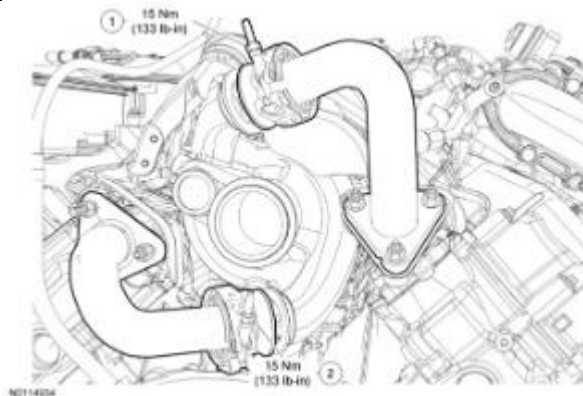
U.S. Mailing Address: P.O. Box 231, Sumas, WA 98295

Phone: 604-853-6096 | Fax: 604-853-8749 | Internet: www.bddiesel.com

Notes: If using the BD manifolds, the passenger side heat shield may need to be hammered to fit or have a section removed near the turbine housing.

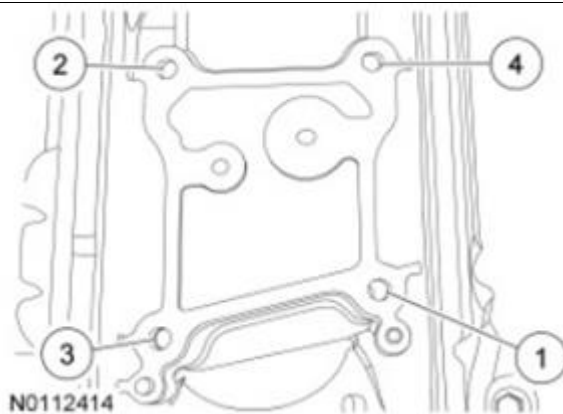


5. Connect hot-pipe feed tubes and lightly tighten v-band clamps.



6. Tighten the 4 turbocharger mounting bolts.

Torque to 42 ftlbs (55 Nm)

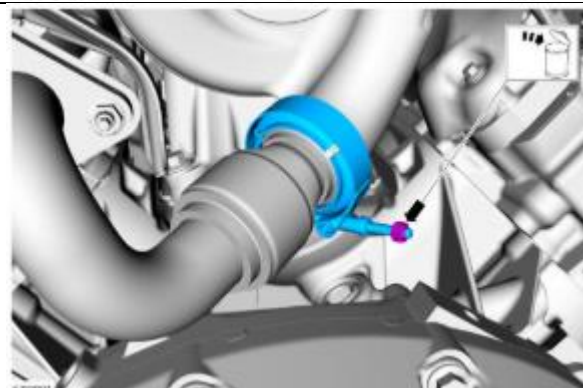


7. Tighten the hot-pipe feed tube v-band clamps.

Stage 1: 150 lb in (17 Nm)

Stage 2: Loosen 3 turns

Stage 3: 159 lb in (18 Nm)

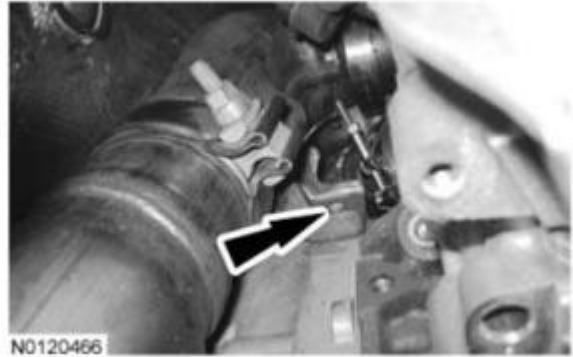
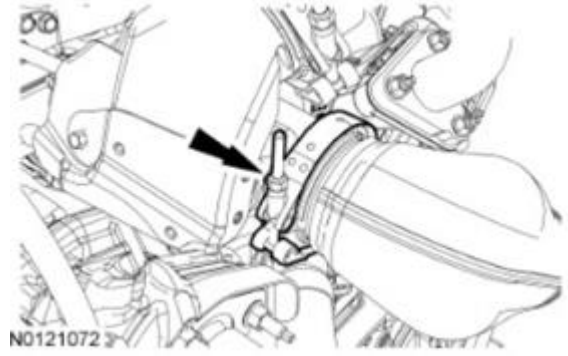


8. Connect turbocharger downpipe v-band clamp, and downpipe bracket bolt.

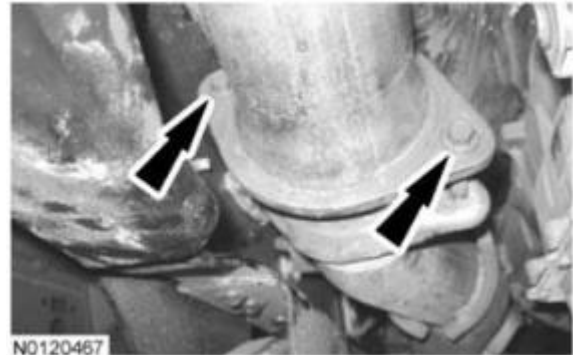
Tighten downpipe bracket bolt to 18 ft lbs (25 Nm).

Downpipe V-band Clamp to turbo: 159 lb in (18 Nm)

Upper to lower downpipe clamp: 41 lb ft (55 Nm)



9. Re-install the lower exhaust downpipe bolts and torque to 26 lb ft (35 Nm).



10. Ensure O-Ring 1407079 is installed on coolant spacer block 1405827.

Install the supplied coolant tube FC3Z-9U469-B using BD spacer block.

Use the supplied M6 x 65mm bolt FT-0135928.



11. Disconnect the turbocharger actuator electrical connector and disconnect the wastegate actuator vacuum hose on pickup models.

Cap the shown location where the wastegate actuator solenoid was fed using the supplied Rubber bullet cap (1900068). You should

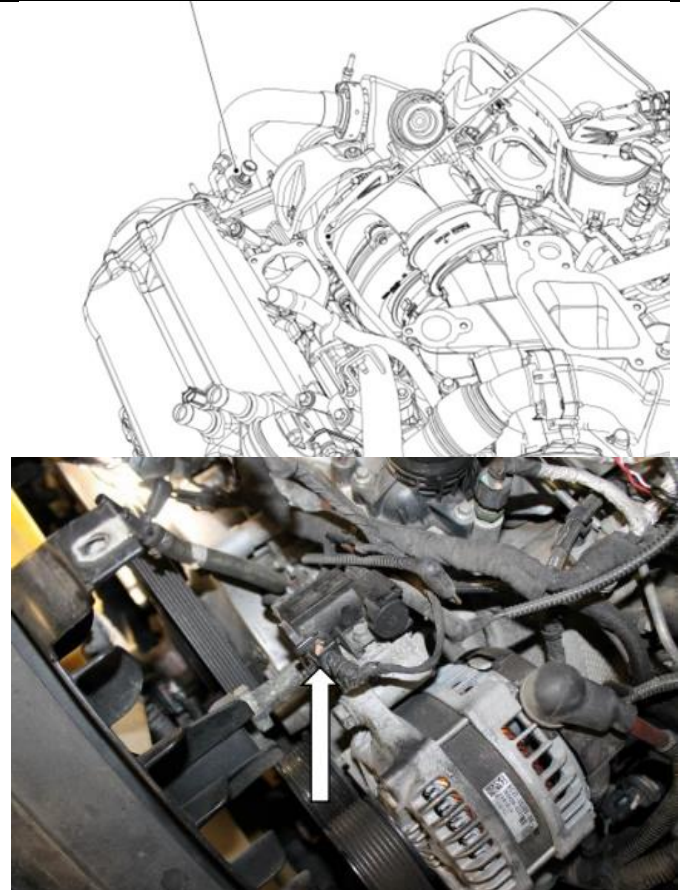


now be able to remove the electrical solenoid if needed.

Note: Cab and Chassis models will not need to disconnect the wastegate actuator hose.

12. Pickup Trucks:
plug in harness 1515950 into the wastegate solenoid harness and in-line with the exhaust back pressure sensor.

Cab & Chassis: move on to step 13.

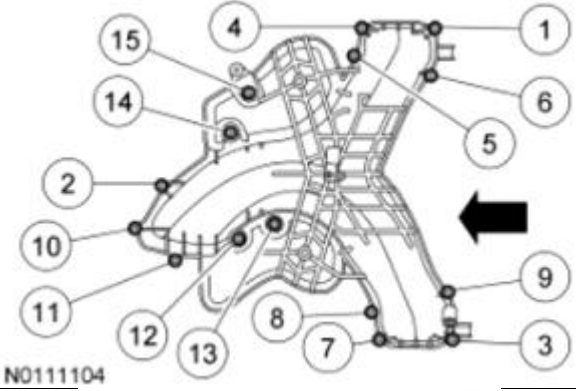
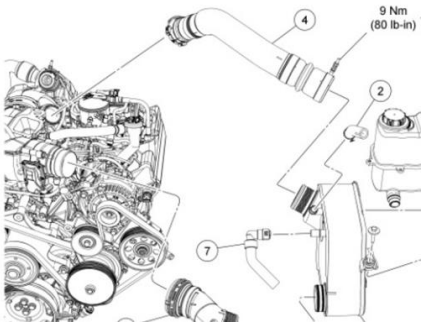



13. Pickup Trucks:
Install BD boot cap 1405829 on the intake manifold. Install boot 1405858 onto the lower portion of the intake manifold. Use clamps FT-0427640 to secure both boots in place.

Cab & Chassis:
Re-use the factory inlet boot and clamps.

Ensure clamp FT-0427642 is on the turbo inlet boot. Install lower intake manifold assembly.
Torque to 18 lb ft (24 Nm).



<p>14. Install the upper and lower intake manifold assembly. Torque to 89 in lbs (10 Nm).</p>	
<p>15. Reinstall the charge air cooler tube.</p>	
<p>16. Change the oil, oil filter, and refill the engine coolant. Perform an engine coolant pressure test to ensure there are no leaks.</p>	
<p>17. Reinstall the front right fender and tire.</p>	

Troubleshooting

If your engine callibration has not been properly calibrated for the larger GT37 turbo, you may receive one of the below faults.

<p>P0299</p>	<p>Description: Turbocharger A Underboost Condition</p> <p>Solution: The Ford GT37 Retrofit kit requires a sufficient engine calibration. We recommend an Edge Evolution for 1045824 or PPEI for 1045825.</p>
<p>P1247</p>	<p>Description: Turbocharger Boost Pressure Low</p> <p>Solution: The Ford GT37 Retrofit kit requires a sufficient engine calibration. We recommend an Edge Evolution for 1045824 or PPEI for 1045825.</p>
<p>P1249</p>	<p>Description: Wastegate Control Valve Performance</p> <p>Solution: Install the provided 1515950 harness</p>
<p>P132B</p>	<p>Description: Turbocharger Boost Control A</p> <p>This DTC sets if the PCM detects that the difference between the manifold absolute pressure (MAP) readings are not greater than the calibrated value for a specified period of time when the intrusive monitor runs at idle (change from 1.0kpa to 2.0kpa)</p> <p>Solution: Monitor Vane Position, MAP and Exhaust Back Pressure (EBP) at idle. When the Vane Position is swept (intrusive monitor) EBP will vary, MAP must vary by 1.0-2.0kpa.</p>
<p>EBP Connector Won't "Click"</p>	